Contents

Preface vii

Conference organization ix

Supporting organizations and sponsors x

Excimer laser polymer ablation: formation of positively charged surfaces and its application into the metallization of polymer films
H. Niino and A. Yabe 1

Structure of metallic multilayers studied by X-ray absorption spectroscopy
S. Pizzini, F. Baudelet, A. Fontaine, D. Chandesris, H. Magnan, A. Fert and C. Marlière 7

Designing surface properties of textile fibers by UV-laser irradiation
T. Bahners, W. Kesting and E. Schollmeyer 12

Laser-induced surface modification and structure formation of polymers
E. Arenholz, J. Heitz, M. Wagner, D. Bäuerle, H. Hibst and A. Hagemeyer 16

Mechanisms of synchrotron radiation-excited etching reactions of semiconductor materials
H. Ohashi, A. Yoshida, K. Tabayashi and K. Shobatake 20

Temperature dependence of synchrotron radiation induced growth initiation in the molecular beam chemical vapor deposition of Al on a SiO_2 surface
F. Uesugi and I. Nishiyama 27

Large scale excimer laser production of submicron periodic structures on polymer surfaces
M. Bolle and S. Lazare 31

Maskless excimer laser induced projection patterning of InP in Cl_2 etch gas
R. Heydel, R. Matz and W. Göpel 38

Reflectance anisotropy from (001) GaAs surfaces during pseudo-ALE growth of GaAs
S.R. Armstrong, R.D. Hoare, I.M. Povey, M.E. Pemble, A. Stafford, A.G. Taylor and D.R. Klug 46

Laser etching of silicon by chlorine: effect of post-desorption collisions and chlorine in-diffusion on the laser desorption yield
A. Aliouchouche, J. Boulmer, B. Bourguignon, J.-P. Budin, D. Débarre and A. Desmur 52

ArF excimer laser deposited tin oxide films studied by "in situ" surface diagnostics and by synchrotron radiation induced UV photoemission
R. Larciprete, E. Borsella, P. De Padova, M. Fanfoni, M. Mangiantini and P. Perfetti 59

Nondestructive evaluation of solids and deposited films by thermal-wave interferometry
E. Oesterschulze, M. Stopka, M. Tochtrop-Mayr, K. Masseli and R. Kassing 65

Laser direct writing of gold to repair defective lines in thin-film metallizations
D. Metzger and H. Reichl 69

High speed laser writing of gold lines from organic solutions
K. Bali, T. Szörényi, M.R. Brook and G.A. Shafeev 75

Deposition of micron-size nickel lines by argon-ion laser-assisted decomposition of nickel tetracarbonyl
S. Boughaba and G. Auvert 79

Laser direct-write Al deposition on Si, GaAs and diamond from trialkylamine-alane precursors
F. Foulon, O. Lehmann and M. Stuke 87

Direct deposition of patterned copper films on Teflon
W.L. Perry, K.M. Chi, T. Kodas, M. Hampden-Smith and R. Rye 94

The ohmic contact formation mechanism in laser beam mixed Au/Te/Au/GaAs structures
J. Watté, R.E. Silverans, M. Van Hove and K. Wuyts 101

High-intensity KrF excimer laser processing of metal surfaces
J.E. Montagne, Th. Sarnet, Ch. Prat, G. Inglesakis and M. Autric 108

Critical issues for single-chamber manufacturing: the role of laser technology
D.J. Ehrlich 115

Fabrication and characterization of selectively grown $Si_{1-x}Ge_x$/Si p^+/n heterojunctions using pulsed laser induced epitaxy and gas immersion laser doping
K.-J. Kramer, S. Talwar, E. Ishida, K.H. Weiner and T.W. Sigmon 121

A novel VUV photochemical deposition apparatus
C. Manfredotti, F. Fizzotti, M. Boero and G. Piatti 127

A simple formalism for the prediction of angular distributions in laser ablation deposition
J.C.S. Kools, E. van de Riet and J. Dieleman 133

Pulsed laser deposition and processing of biocompatible hydroxylapatite thin films
C.M. Cotell 140

Lithium niobate films grown by excimer laser deposition
C.N. Afonso, F. Vega, J. Gonzalo and C. Zaldo 149

Pulsed laser deposition growth of ZnSe, MnSe, and ZnSe/MnSe epilayers
J. Misiewicz, C. Huber, D. Heiman and T.Q. Vu 156

Pulsed laser ablation and deposition of semiconducting thin films: characterization of transient species
A. Giardini Guidoni, A. Mele, G. Pizzella and R. Teghil 161

Mass spectrometric investigation of the KrF laser-induced plasma plume created above an YBaCuO superconducting target: correlation with thickness distribution of deposited thin films
C. Champeaux, D. Damiani, J. Aubreton and A. Catherinot 169

Time-resolved diagnosis of processes in PLD of ceramics
A. Voss, E.W. Kreutz, J. Funken, M. Alunovic and H. Sung 174

Time-resolved absorption studies of excimer laser ablation of CaF_2
R. Mitzner, A. Rosenfeld and R. König 180

VUV light production from a formed-ferrite plasma source
M.L. Sentis, Ph. Granier, F. Chazaud, W.I. Marine, M. Gerry and R.C. Sze 185

New lamp arrangement for rapid thermal processing
J.-P. Zöllner, K. Ullrich, J. Pezoldt and G. Eichhorn 193

Bulk and surface properties of RTCVD Si_3N_4 films for optical device applications
F. Lebland, Z.Z. Wang, J. Flicstein, C. Licoppe and Y.I. Nissim 198

Pulsed laser deposition – a versatile technique only for high-temperature superconductor thin-film deposition?
H.-U. Habermeier 204

Hetero-epitaxial oxidic conductor $La_{1-x}Sr_xCoO_3$ prepared by pulsed laser deposition
J.F.M. Cillessen, R.M. Wolf and A.E.M. De Veirman 212

Laser ablation studies of magnesium oxide
L. Dirnberger, P.E. Dyer, S. Farrar, P.H. Key and P. Monk 216

Deposition of $YBa_2Cu_3O_x$ by laser ablation on Si(100) using different buffer layers
F. Sánchez, M. Varela, X. Queralt, M.V. García-Cuenca, J. Palau, R. Aguiar and J.L. Morenza 221

Dynamics of graphite photoablation: kinetic energy of the precursors to diamond-like carbon
P.T. Murray and D.T. Peeler 225

Pulsed laser crystallization and doping for the fabrication of high-quality poly-Si TFTs
E. Fogarassy, H. Pattyn, M. Elliq, A. Slaoui, B. Prevot, R. Stuck, S. de Unamuno and E.L. Mathé 231

Laser-induced modifications in a-C:H thin films
J. Spousta, J. Perrière, A. Laurent, E. Fogarassy, B. Prevot and S. de Unamuno 242

Shallow p–n junctions produced by laser doping with boron silicate glass
D. Bollmann, G. Neumayer, R. Buchner and K. Haberger 249

Single-shot micro-patterning of polymer surfaces by UV incubation/dye laser ablation using photochromism
S. Preuss and M. Stuke 253

SF_6 sensitized CO_2 laser CVD of amorphous silicon
E. Golusda, P. Hessenthaler, G. Mollekopf and H. Stafast 258

Effects of UV light on the deposition kinetics and optoelectronic properties of a-Si:H films deposited by RF glow discharge
N. Layadi, P. Roca i Cabarrocas, V. Yakovlev and B. Drévillon 262

Laser-induced CVD of titanium diboride and the influence of atomic hydrogen
J. Elders and J.D.W. van Voorst 267

Laser induced fluorescence spectroscopy of WF_6/M ($M = H_2$, Ar) gas mixtures during LCVD of W at a high laser energy density
P. Heszler, P. Mogyorósi and J.O. Carlsson 272

Low temperature deposition of SiO_2 and PSG using SiH_4, N_2O and phosphorous vapour for damage-free passivation of InP-based PIN diodes by plasma- and photo-assisted LPCVD
R. Riemenschneider, N. DasGupta, R. Schütz, H.L. Hartnagel and H. Kräutle 277

The role of silane and N_2O in the CO_2 laser-CVD of silicon oxide films
D. Fernández, P. González, J. Pou, E. García, J. Serra, B. León and M. Pérez-Amor 281

"In situ" XPS study of the photoassisted reduction of noble-metal cations on TiO_2
A. Fernández and A.R. González-Elipe 285

Laser induced plasma formation by picosecond pulse irradiation
W. Marine, M. Gerri, P. Thomsen-Schmidt and J.M. Scotto d'Aniello 290

Large area photochemical dry etching of polyimide with excimer UV lamps
J.Y. Zhang, H. Esrom, U. Kogelschatz and G. Emig 299

Laser-induced deposition of aluminium on gallium arsenide and silicon nitride from trimethylamine alane
T. Frugier, A. Boulahia, A. Sayah, D. Tonneau, J.E. Bourée, J.M. Siffre and D. Mencaraglia 305

A comparison of SiO_2 thin-film UVCVD rates and mechanisms from SiH_4/O_2 and SiH_4/N_2O precursor gases by surface-sensitive infrared spectroscopy
C. Debauche, C. Licoppe and J. Flicstein 310

Ar^+ laser-induced forward transfer (LIFT): a novel method for micrometer-size surface patterning
Z. Tóth, T. Szörényi and A.L. Tóth 317

Laser beam deflection monitoring of Nd:YAG laser ablation: pulse shape and repetition rate effects
J. Diaci and J. Možina 321

Quest for high quality local electroless laser deposition from the liquid phase: decomposition of ammonium molybdate
K. Bali, Zs. Geretovszky, A.L. Tóth and T. Szörényi 326

Time resolved reflectivity and transmission measurements during laser induced blow-off of thin metal films
Z. Tóth, J. Solis, C.N. Afonso, F. Vega and T. Szörényi 330

In situ growth of YBaCuO superconducting thin films by excimer laser ablation: influence of deposition and cooling parameters
C. Champeaux, P. Marchet, J. Aubreton, J.-P. Mercurio and A. Catherinot 335

Laser studies of polystyrene precursors performed through resonant two photon ionization processes in a supersonic molecular beam
A. Giardini Guidoni, S. Piccirillo, M. Coreno, M. Snels, A. Morone and R. Teghil 340

Tungsten silicide formation by multipulse excimer laser irradiation
S. Luby, E. Majkova, E. D'Anna, A. Luches, M. Martino, A. Tufano and G. Majni 345

An optical in-situ method for layer growth characterization
N. Dietz and H.J. Lewerenz 350

Determination of the refractive index of $In_{0.53}Al_{0.11}Ga_{0.36}As$ on InP in the wavelength range from 280 to 1900 nm by spectroscopic ellipsometry
H.W. Dinges, H. Burkhard, R. Lösch, H. Nickel and W. Schlapp 355

Laser ablation of graphite targets
C. Germain, C. Girault, J. Aubreton and A. Catherinot 359

Laser deposition of thin films of high T_c superconductors. In situ analysis of the transient species formed in the plume and surface diagnostics of the deposited material
A. Giardini Guidoni, I. Pettiti, A. Morone, V. Marotta, M. Snels, G.P. Parisi and G. Bentivenga 365

Acoustic in situ monitoring of excimer laser ablation of different ceramics
L. Grad and J. Možina 370

Time resolved spectroscopy of the emission of fluorescent light upon UV laser assisted CVD of W from WF_6
P. Heszler, P. Mogyorósi and J.O. Carlsson 376

Laser CVD on carbon fibres: structure of layers and tensile strength of fibres
V. Hopfe, S. Böhm, G. Wieghardt and A. Schulze 380

In situ second harmonic generation measurements during the electrodeposition of Ni on n-Si(111)
J. Krüger, N. Sorg, J. Reif and W. Kautek 388

Direct photo-deposition of silicon dioxide films using a xenon excimer lamp
P. Bergonzo, U. Kogelschatz and I.W. Boyd 393

Rapid thermal and large area processing of thin films with a line electron beam
M. Pauli, G. Dähn, J. Müller and M. Döscher 398

Real time emission spectroscopy during deposition of germanium oxide films by laser ablation
F. Vega, C.N. Afonso and J. Solis 403

A new encapsulation method of InP during post implantation annealing
A. Kadoun, J. Tardy, I. Thomas, M. Gendry, V. Drouot, G. Bremond, D. Barbier and A. Laugier 407

Laser direct writing of titanium silicide thin films
G. Reisse, F. Gänsicke, A. Fischer and H. Johansen 412

Determination of UV-laser induced surface structures by atomic force microscopy
L. Wefers, D. Bosbach, W. Rammensee and E. Schollmeyer 418

Internal second-harmonic generation in CW AlGaAs SQW lasers: the facet degradation monitoring
I.V. Kravetsky, L.L. Kulyuk, A.T. Lupu, D.A. Shutov, G.I. Suruceanu, A.V. Syrbu and V.P. Yakovlev 424

Author index 429

Subject index 435